U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
SEATTLE, WASHINGTON 98112

CRUISE RESULTS

Cruise No. OR-79-02 NOAA R/V Oregon
Cruise No. P-79-01 F/V Paragon II
Cruise No. DB-79-02 F/V Discovery Bay
Cruise No. Yakushi Maru No. 21
Cruise No. Shotoku Maru No. 35

Cruise Period

R/V Oregon: 20 May-27 August 1979
F/V Paragon II 16 May-21 August 1979

F/V Discovery Bay 3 July- 24 August 1979
Yakushi Maru No. 21 1 June-14 August 1979
Shotoku Maru No. 35 1 June-10 August 1979

Itinerary

See Table 1.

Area

The 1979 crab-groundfish survey ~~of the eastern Bering Sea provided the most extensive coverage since its inception in 1971.~~ was the most study of its kind in the eastern Bering Sea. surveyed by the U.S. vessels The survey area extended from Unimak Pass and the Alaska Peninsula north to 63° 40' N lat. and from nearshore waters to depths of 75 fm ~~178° 35' W long. east to inner Bristol Bay~~ on the continental slope (Fig. 1).

The R/V Oregon surveyed most of the historical comparative area (which it has fished since 1971), concentrating on subareas 1 and 2 and the southern portions of subareas 3S and 4S.

The F/V Paragon II covered virtually the entire shelf survey area ~~assigned to U.S. vessels~~, reaching the northernmost regions adjacent to St. Lawrence Island. A separate survey of Norton Sound resources was conducted simultaneously, extending to the Bering Sea crab-groundfish survey boundaries.

The F/V Discovery Bay fished the western part of the survey area, including subareas 3N and 3S on the continental shelf and subareas 2 Slope and 3 Slope over the shelf edge.

Probably just replace w/ figure

The Yakushi Maru fished along the Aleutians to inner Bristol Bay, skirting the coast to Nunivak Island, dropping to St. Paul Island, then following the slope southeast to Dutch Harbor.

The Shotoku Maru traveled from the slope east of the Pribilofs northwest to Nunivak Island, ~~cut-acro traversrse~~-- traversed to St. Lawrence Island, headed southwest to the slope region, following the edge back down to the Pribilof area.

OR:

The survey patterns of the Japanese research vessels are illustrated in Fig V.

Primary Objectives

1. To provide an annual assessment of crab and groundfish resources of the eastern Bering Sea ~~continental shelf and slope~~.

2. To measure selected oceanographic parameters which may affect the abundance and distribution of these populations.

3. To study long-term changes in the demersal fish and invertebrate community of the eastern Bering Sea by relating results of the 1979 survey to a similar large-scale survey in 1975 (and 1976??) and future large-scale studies at three-year intervals.

4. To expand the U.S. data base by incorporating results of Japanese research surveys.

5. To initiate exploration of demersal fish and invertebrate resources of the continental slope between 200-1000 m.

6. To conduct side-by-side and "tail attack" (one vessel towing directly behind the other) trawling experiments to provide fishing power comparisons between U.S. and Japanese vessels participating in the survey and to assess the adequacy of these methods.

Secondary Objectives

1. To collect morphometric and biological data on blue king crab (Paralithodes platypus) and hair crab (Erimacrus isenbeckii).

2. To establish complete specimen collections ~~to be examined and~~ for reference collections of ~~maintained by~~ the University of Washington College of Fisheries, the Smithsonian Institute, the NMFS Systematics Laboratory in Washington, D.C., and the California Academy of Sciences. ~~(Iwamoto's lab).~~

3. To ~~sample specific locations~~ collect samples of yellowfin sole, ~~and~~ pollock, ~~on the shelf and~~ sablefish, and rockfish ~~on the slope~~ for genetic ~~studies from~~ analysis.

4. To photograph demersal fish and invertebrates.

5. To collect fecundity and maturity samples ~~of pell-~~ from pollock.

6. ~~To~~ gather ~~collect~~ maturity ~~data on any spawning, commercially fished species~~.

7. To assess the Marinovich midwater trawl for sampling juvenile pollock

Kodiak's objectives??

GEAR

The trawl survey and comparative towing was conducted using a standard 400 mesh eastern otter trawl of 3 1/2 inch (89 mm) mesh, with a 1 1/4 inch (32 mm) mesh codend liner. The net was fished with 15 8-inch (203 mm) floats on the headrope, dandylines were 25 fathoms (45.5 m) including 10 fathom (18.2 m) bridles. Five foot by seven foot (1.5 m x 2.1 m) Astoria "V" doors were used. No chain was used on the footrope. Station sampling procedure included the collection of echosounder tapes (Ross 200A), and the daily release of XBT probes to obtain temperature profiles. In addition to the bottom trawling at standard grid stations, experimental midwater trawling was carried out intermittently to determine the feasibility of using midwater trawling techniques to index the abundance of juvenile age 1 pollock. The trawl used was a Marinovich trawl with a 30-foot headrope and footrope, 3-inch (76 mm) mesh in the dogears and square, 2 1/2-inch (64 mm) mesh in the belly, 2-inch (51 mm) mesh in the body, 1 1/2-inch (38 mm) mesh in the funnel, and 1 1/4-inch (32 mm) mesh in the intermediate and cod end with a 1/2-inch (13 mm) mesh liner in the intermediate and cod end. The trawl was rigged with 28 8-inch (203 mm) floats and 80 pounds (36 kg) of chain on each end of the footrope. Dandylines were 10 fathoms (18 m) and doors were the same as used with the 400 mesh eastern trawl.

The Japanese vessels fished landbased dragnet gear.

~~Japan: landbased dragnet gear~~

Methods

The R/V Oregon and charter vessels Paragon II and Discovery Bay participated in the 1979 crab-groundfish survey. The vessels Yakushi Maru No. 21 and Shotoku Maru No. 35, two chartered landbased dragnet vessels, conducted the annual Japanese research survey of the eastern Bering Sea which will be consolidated with the crab-groundfish survey data. Comparative towing (by tail-attack and side-by-side methods) between the Oregon, Discovery Bay, and Yakushi Maru was conducted 30 July- 6 August, along the Aleutians southwest of Port Moller. Comparative trawling between the two Japanese vessels occurred 5-7 July, northwest of the Pribilofs.

The NMFS survey design was based on the standard 20 x 20 nautical mile (nm) grid system. Station density varied from 10-40 nm depending on known distributions of principal species and time limitations. One-half hour tows were made at the center, and/or corners, or mid-points of each grid square.

All king and Tanner crab were removed from the catch. Crabs were first sorted by species, then by sex. Crabs were sampled for length, width, shell condition, sex, egg condition, and fullness of egg clutch.

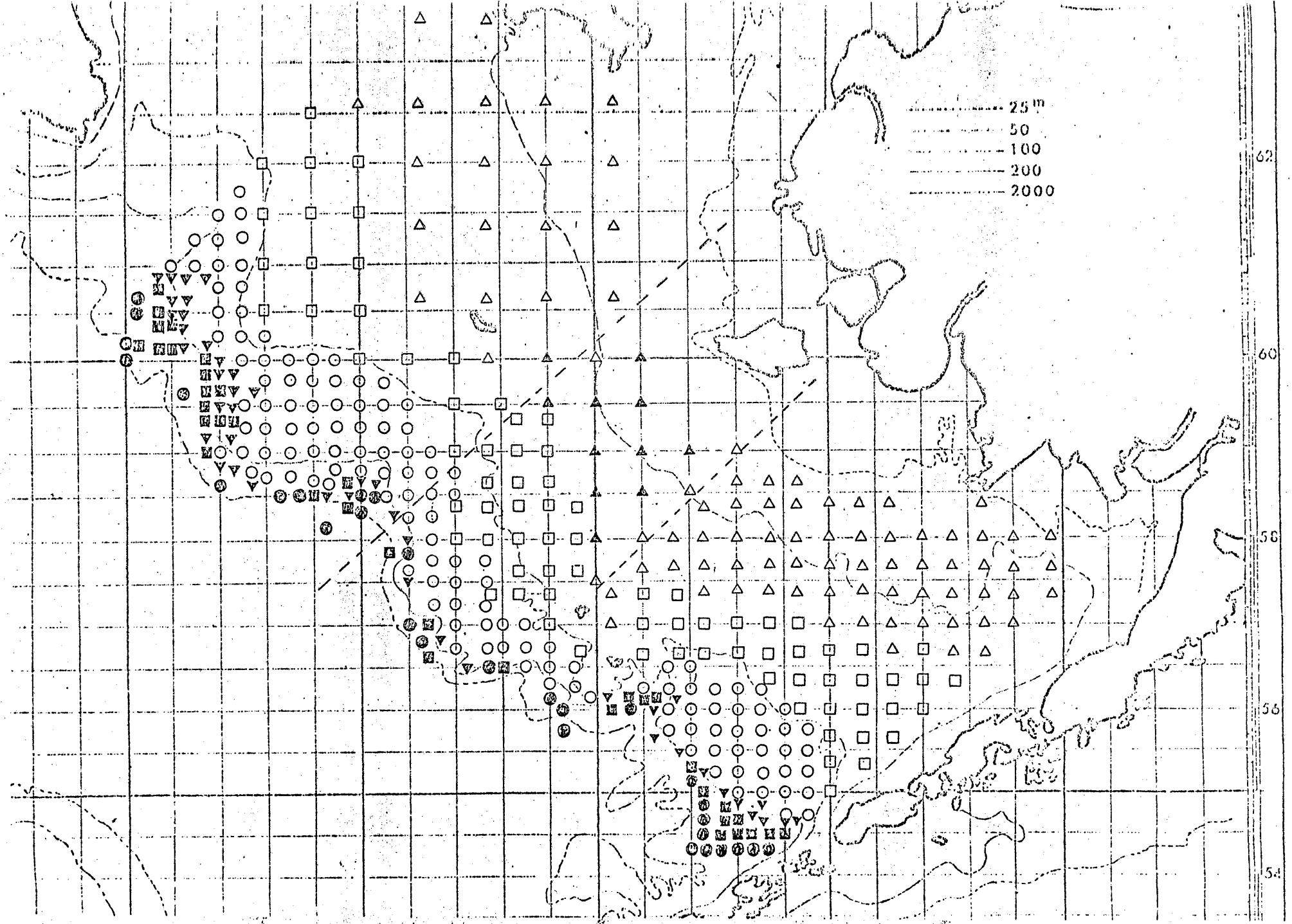
Groundfish were separated by species, numbers and weight, and subsamples of principal species were taken for biological information. Length-frequency information was taken from as many of the principal species as time permitted from each haul. Otolith samples, stratified by sex and centimeter size categories, were taken from most commercially important species.

Similarly, the density of Japanese survey stations ranged from 10 to 40 nm nm, dependent on depth. Tows were hr long.

Table 1. Itinerary & Crew of vessels

Fig 1. Survey area station pattern w/ subareas superimposed

Fig 2. Japanese station pattern and survey area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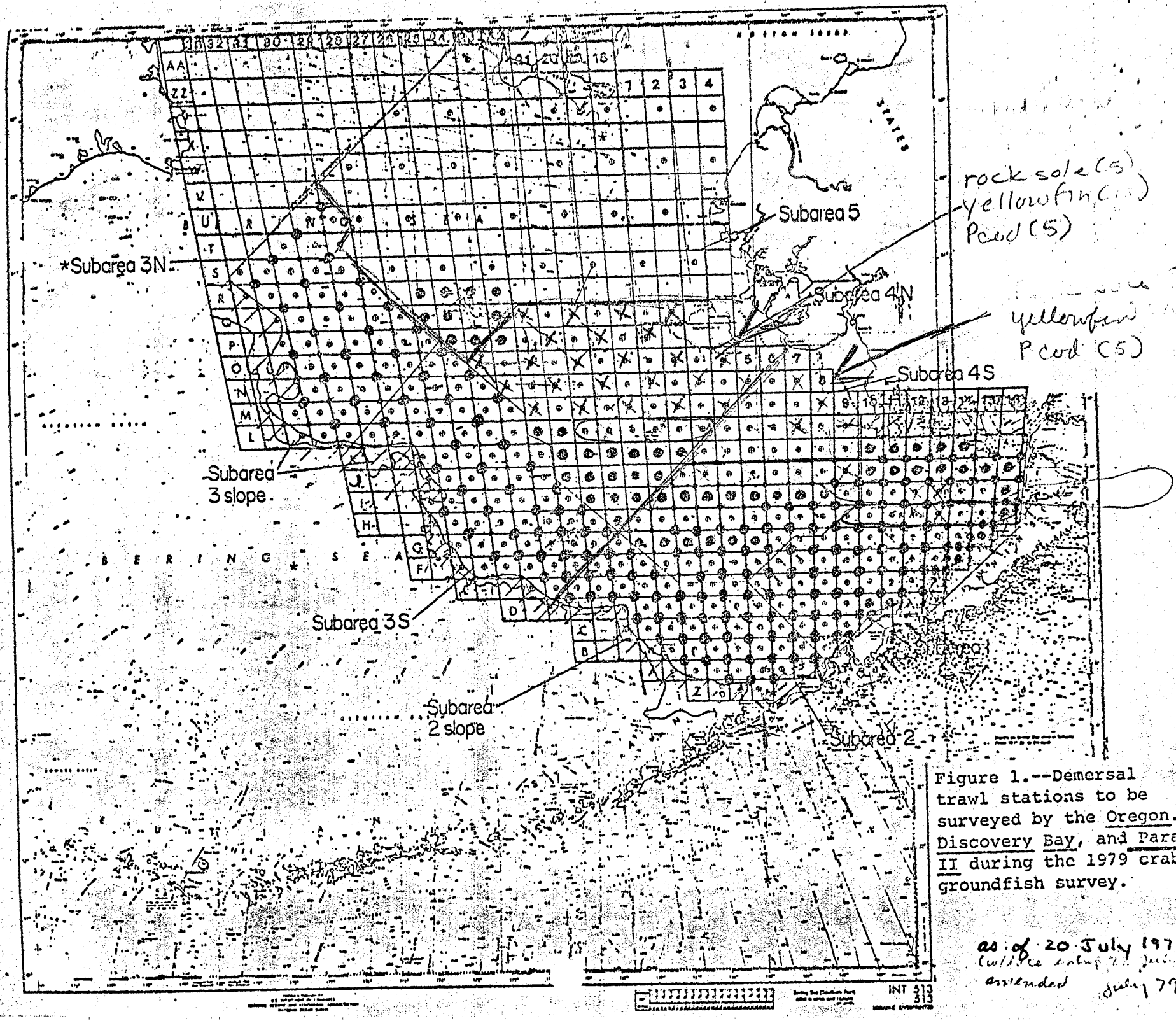

Figure 1.--Demersal trawl stations to be surveyed by the Oregon, Discovery Bay, and Paragon II during the 1979 crab-groundfish survey.

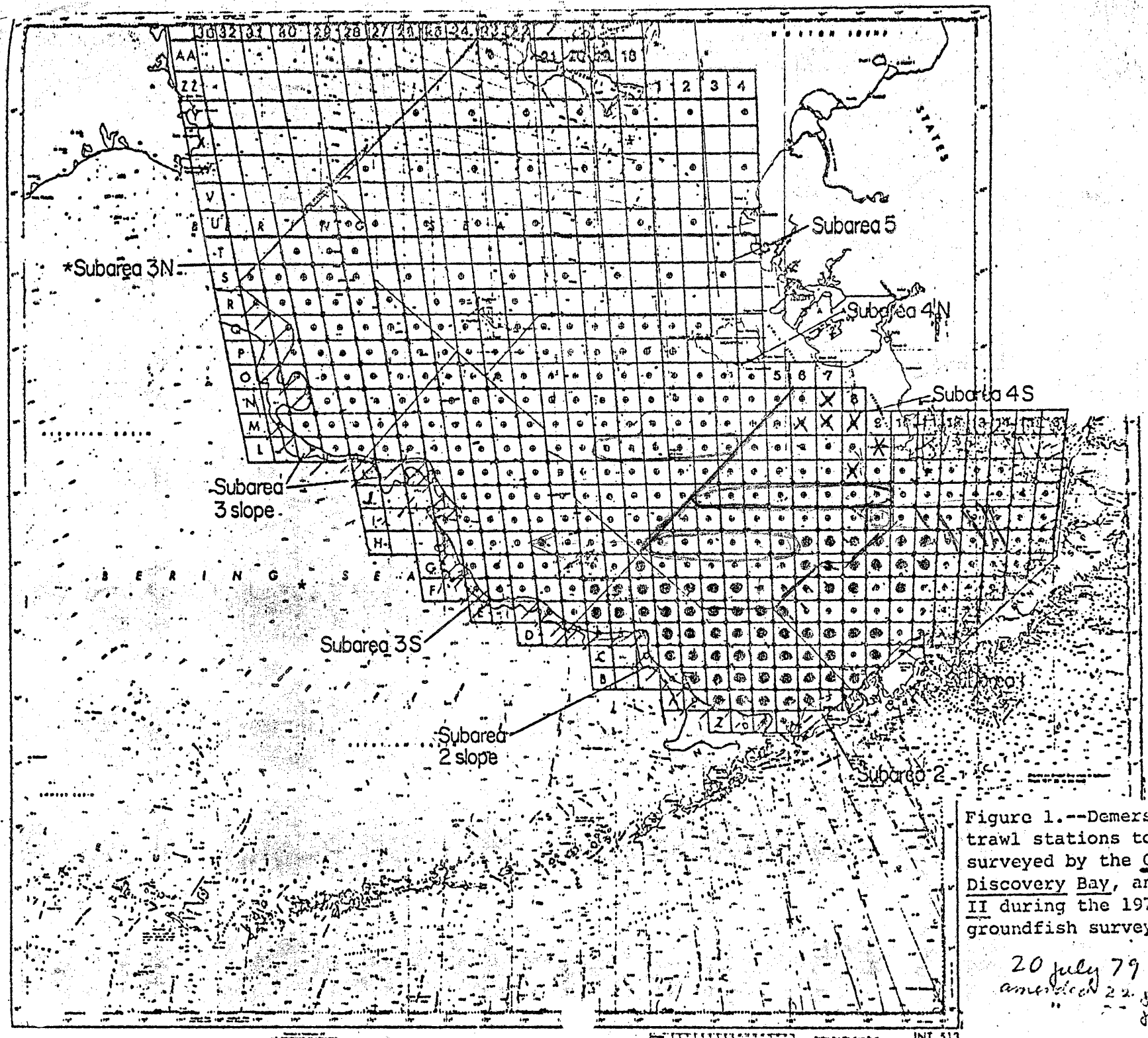

Figure 1.--Demersal trawl stations to be surveyed by the Oregon, Discovery Bay, and Farnagon II during the 1979 crab-groundfish survey.

20 July 79
amended 22 July 79
" 27 July 79

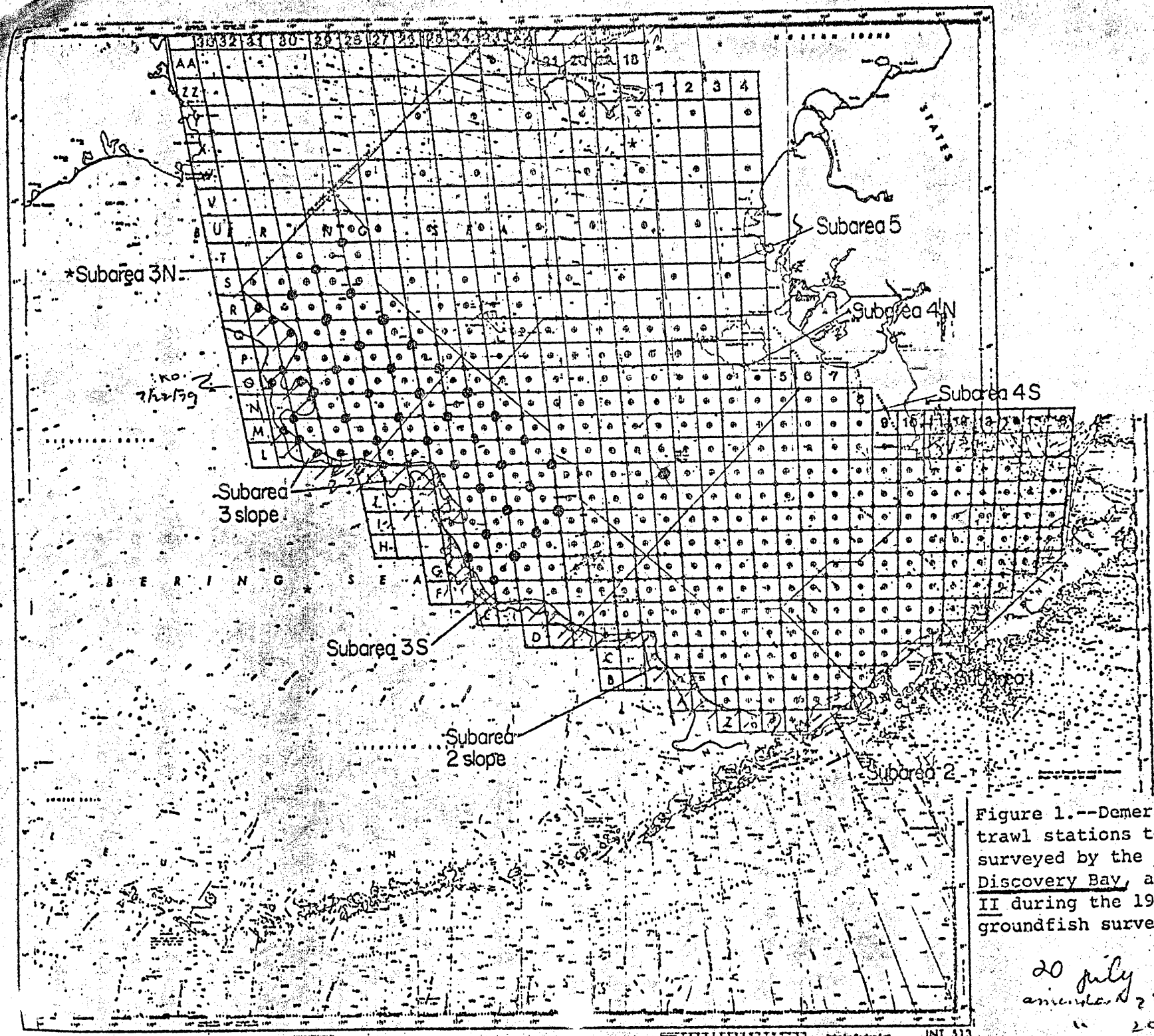

Figure 1.--Demersal trawl stations to be surveyed by the Oregon, Discovery Bay, and Paragon II during the 1979 crab-groundfish survey.

20 July 79
amended 22 July 79
" 25 July 79

R/V OREGON LEG 3 CRUISE SYNOPSIS

PERSONNEL: Kessler, Doyne W. Party chief, Kodiak NMFS

Fukuyama, Allan, Kodiak NMFS

Patten, Benjamin G., Seattle NMFS

Wilson, Steve, Seattle NMFS

Date of cruise: Start June 27, 1979, End July 15, 1979

Vessel activity: days in port =1 (approx.)

days in transit =4 -- 2 days were actually due to return to repair mech. Failure

days lost to mechanical failure =5 -- in port

days fishing =8 -- 3 were not full days

days lost to weather =3 -- in port

Number of hauls =32 bottom drags with eastern 400

General observati9ons: Initial delay because of apparent foul weather (departed Unalaska late June 29). Returned to Unalaska on July 2 because of failure of the auto steering. The first delay was because the replacement solonoid did not arrive until second day in port. The second delay was due to a difference in the replacement solonoid requiring that a sperry gyro specialist fly out and make the necessary adjustments--a two day job. After returning to the Bering Sea the rough weather subsided enabling interruption free fishing from July 9 to the evening of the 14th at the end of the leg.

Specimens taken for age (otolith) + length data. Rocksole sampled in Bering Sea subarea 2. Rocksole were infrequent in catches in subarea 1 where most of the trawls were made. Pollock were sampled for age + length in subareasl and 2. Since the Fisher alchohol used in previous collections was detremental to the reading of the otoliths, as near a complete a sample of age + length data were taken as fish abundance and time permitted. Actual numbers of specimens used are unknown except through enumeration of the otoliths.

Numbers of length frequencies taken --see printouts.

Special tasks were undertaken by D. Kessler. This involved photographing the various sea life for the forthcoming manuscript by Kessler on Bering Sea biota identification.

Data collection procedures and equiptment were without problems. Only one data logger was aboard; however, there was adequate time to punch out all information.

Several problems came up that perhaps should not have caused the delays they did. The first delay was because of the combined excuse that the groceries had not arrived/and via air freight reported heavy seas. The problem of late grocery shipments is apparently a common one and perhaps should be resolved. Those making the orders shold do so at an opportune time (with port time of a vessel) and ensure that the orders are on time. The Oregon should have ventured out to the Bering Sea along the peninsula and been in position for a short run to the fishing grounds.

The major cause for loss of fishing time was the solonoid problem of the auto steering. The ships engineers did a commendable job in determining the problem and replacing the solonoid with a new one.Unfortunately the new part was slightly different requiring a Sperry expert to determine this. Apparently the replacement parts aboard the Oregon are minimal and perhaps should beenlarged to include major components that commonly self-destruct. Another difficulty was encountered when a large catch needed splitting. This was done awkardly over a period of time. In general thecrew of the Oregon was competentfor the job. The high turnover rate of the fishermen cannot be conducive to a competent crew failiar with the vessel and procedure. A higher pay scale would attract a better man and keep him on the vessel through the season. This extends up to the captain as well.

Special recommendation. I would estimate that it solely by sheer luck that no

serious accidents have occurred aboard research or foreign vessels (observer program). Two incidents aboard the Oregon could have resulted in serious injury. In one case, a biologist was near beaned by a swinging hook and in the ot othera biologist was stradeling a cable just as the tension was put on to lower a door--very precarious. In the future special awareness classes should be held for those uninitiated (or even old salts), and special restrictions should be made on biologists to keep them out of the way of the fishermen, away from hazardous locations, and becomming involved in tssks of the crewmen.

Another possible source of vessel delay or inconvienience to the transitory biologists is the never ending delay of baggage to Dutch Harbor. Complaints should be made to the airlines or somehow make for a more positive connection of the baggage.